Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL, AND OTHER IMPROVEMENTS.

VOLUME XI. NEW-YORK, MAY 31, 1856. NUMBER 38.

THE
Scientific American,
PUBLISHED WEEKLY
At 123 Fulton Street N. Y. (Sun Buildings.)
BY MUNN & COMPANY.

O. D. MUNN S. H. WALES A. E. BEACH.

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Single copies of the paper are on sale at all the periodical stores in this city, Brooklyn, and Jersey City.

TERMS—$2 a-year,—$1 in advance and the remainder in six months

Steam Floating Batteries and Gun Boats.

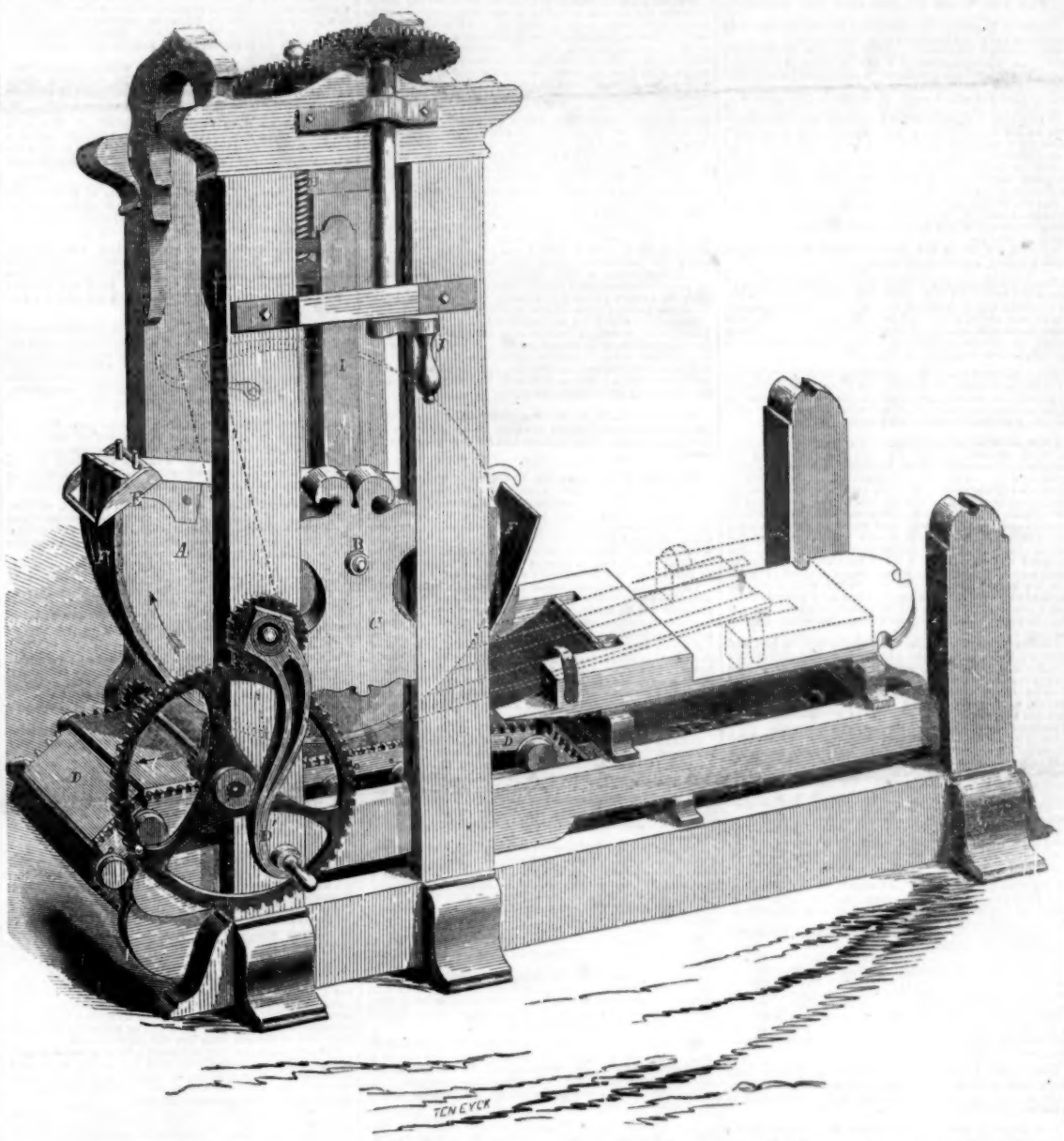
On the 23d of last month the grandest naval review ever witnessed was held near Portsmouth, England. The fleet extended in double line for a distance of twelve miles, and numbered more than 200 steam vessels of all sizes huge line-of-battle ships, frigates, gun-boats, and floating batteries. Our government might learn a useful lesson regarding the construction of some floating batteries at the review, viz., to let out all its ship and engine building by contract to able and responsible private companies, as we have more than once advised. We learn by one of our London exchanges that three of these steam floating batteries were contracted for only on the 1st of January last, and were to be finished complete by the 15th of April—a little over three months—under a penalty of $5000 for every days' delay afterwards. At the time specified they were all completed, according to the specifications, and one of them sailed a distance of 500 miles to be present at the review, eight days after the date of contract expired. Each vessel is 2,000 tuns burden, 186 feet long, 50 wide, and 16 deep. The outside planking is 4-inch wrought iron plate, which is lined with teak plank, 6 inches thick. The decks and sides are considered shell and bullet proof. The engines are 200-horse power, high pressure, and work rotary blowers to ventilate between the decks. They are all armed with large cannon and mortars.

Our floating battery at Hoboken has been under construction for more than ten years, and is not yet finished. There are parties in our country, who, no doubt, would contract for, and complete any government job, as well and as speedily as any parties the government works of the British, or any other government. It is mortifying thus to be receiving such lessons from other countries. Let us wake up to a sense of our duty and responsibilities in order that we may sustain our already well earned reputation of an enterprising and active people without a peer.

Among the objects that attracted general attention at the naval review alluded to, were more than 100 steam gun-boats, varying from 400 up to 1,400 tuns burden. They have all come into existence in the course of two years, and are novelties in modern warfare. They are considered to be a great improvement, and fulfil the same offices in a navy that flying artillery do in an army. It is rather singular that Jefferson, when President, had a strong predilection for gun boats, and had quite a number of them built during his administration. These were afterwards condemned by our government naval authorities; and yet we find that his views are now adopted by England as being wise and sagacious, respecting the efficiency of such vessels. It is true, his gun boats were sailing vessels, while the new ones of England are propelled by steam engines; but the question of their efficiency in a navy is the same in both cases.

The sulphuret of carbon is proposed as a solvent for scouring wool and making soaps, as a substitute for caustic alkali.

MACHINE FOR BENDING WOOD.



Wood Bending Machine.

The invention illustrated in our engraving is adapted to the bending of all descriptions of wood, from plow handles up to ship timbers; but the particular machine which we represent is used for forming fellies for wagon wheels.

One of the principal objections to the use of many of the more ordinary bending machines, is the havoc which they occasion by breaking the wood during the process. We are told that it is quite common to estimate the loss of stuff, from this cause, at twenty-five to thirty-three per cent. That is to say, the manufacturer finds that only two-thirds of his stock, after it has passed through the operation, is fit for use.

It is claimed for the invention now under discussion that it saves all this loss, besides doing the work in a superior manner. If this is so it is an important improvement and merits attention. Let us see how the machine is constructed.

A is the former or pattern block, which determines the form that the wood is to receive. A is shaped like a half moon, and pivoted in its center, B, to the slides, C, of which there are two, one on each side of the frame. D is an endless revolving bed or apron, put in motion by means of the crank, D', and cog wheels. The bending is done by attaching one end of the stuff to the former, A, by means of a clamp, E, and then moving the bed, D, in direction of the arrow. The stuff to be bent is pressed tightly between the former, A, and bed, D, so that when the latter is moved the wood is drawn in between.

In the cut, F is the board, partly bent. The position of the stuff, and also of former, A, at th commencement of the operation, are indicated by the dotted lines.

The pressure of the stuff between the former, A, and bed, D, is obtained by means of the screw, so that it can be regulated with the utmost nicety. It is to this excellent manner of pressing the wood that the success of the machine, in bending without breaking, is due. H is the screw, having a pinion, H', at its top, its lower end being connected, by means of rods, I, with the slides, C. The latter, as we have before stated, carry the bearings of former, A. When, therefore, the slides, C, are moved up or down, the former, A, rises or is depressed accordingly. J is the crank of a shaft having a pinion upon its upper end, which gears with pinion H' on the screw, H. The former, A, is raised and lowered by turning J; the convenience and accuracy of this mode of adjusting former A must be obvious. The wood, almost at the moment of bending, being firmly pressed between A and D, its fibers cannot separate, but come out whole.

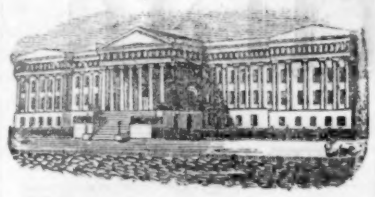
This machine is easily worked, hand power only being required for fellies, and such like articles. By its use one man and a boy can bend ten sets of fellies per hour. Each of these sets is afterwards divided into eight pieces, so that the product is eighty sections of fellies, or eight hundred per diem of ten hours. Machines like that here shown sell for $150, but their cost of manufacture is much less.

Mr Edward J. Updegraff, York, Pa., is the inventor, and will be happy to give further information. Patented April 8, 1856.

Grape Vines in Gardens.

Grape Vines delight in being well manured, and will not give the best satisfaction without a dry bottom and abundance of rich soil. At this period of the season, those who have trained grape vines in their gardens, should examine them thoroughly, to destroy caterpillar worms while they are small. One may now be found in almost every bud, rolled up in a pellet of fine wool. All the labor thus spent will pay for itself. During warm dry weather, the surface of the ground around the roots of vines, should be covered with litter to protect the tender rootlets, that spread out so near the surface.

There are eighteen establishments for manufacturing steel in our country; these have a capacity for making 14,000 tuns per annum. We have the best ores in the world for making steel.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 20, 1856.

CUTTING MEAT—G. V. Brecht, of St. Louis, Mo.: I do not claim to be the inventor of a meat cutter.

But I claim the roller, as constructed, of a series of circular plates, having teeth or hooks on their peripheries, when said plates are put on a twisted square shaft, thus making rows of teeth of the edges of the several plates, and by the twist of the shaft, giving them a spiral form.

WATER CLOSETS—Edward Bockhout and Chas. Hewlett, of New York City: We do not claim a movable bowl, for a movable bowl is used in what is termed the swing urinal.

Neither do we claim the pan for the pan has long been in use in what is known as the pan closet (the bowl is stationary); the pan is also an old device.

But we claim, first, a bowl having the forward and backward motions, by means of the said bowl and waste working on a shaft, or arms, or their equivalent, substantially as described.

Second, we claim the use of the pan in combination with a movable bowl, as set forth.

BOAT FRAMER—Jas. Beetle, of New Bedford, Mass.: I claim the described boat framer, as composed of the sets or adjustable and extension bars, a b c d e f, and connecting contrivances, viz., the keel rests, m m, bars, n o, and their screws, substantially as set forth, the whole being arranged together, essentially in manner and for the object or purpose as specified.

PILL MACHINES—H. E. Chapman, of Albany, N. Y.: I claim the feeding cylinder, C, the knife, K, the grooved bed piece, N, and the two grooved cylinders, B B, having their surfaces driven at different rates of speed, all substantially as described, for the purposes set forth.

FIRE ARMS—Samuel Colt, of Hartford, Conn. Patented in England, March 13, 1855: I do not claim the method of rotating the many chambered breech in fire arms, by a driving pin or bolt operated by the cock or some part of the lock moving in unison with the cock, and sliding in a series of grooves cut in the periphery of the rotating breech, or some part connected with it, which grooves are so formed that in the act of firing the driving pin or bolt will run in one groove without turning the breech, thereby holding the particular chamber in line with the barrel, and in the act of cocking, pass into and along another and diagonal groove, so formed as to rotate the breech in line with the barrel preparatory to another discharge, as this method has long been known, and I have above stated my invention consists in or relates to certain improvements which I have made therein.

I claim combining with the driving pin or bolt and with the series of diagonal and longitudinal grooves for rotating the breech and holding each chamber in line during the discharge, substantially as described, the series of short longitudinal grooves for locking the rotating breech, so that the hammer can rest on the solid metal between two chambers instead of the nipple, substantially as described, to prevent accidental discharges.

And I also claim, in combination with the said driving pin or bolt, and the series of long longitudinal and diagonal grooves, the lateral grooves or inclined planes, substantially as described, to admit of turning the breech by hand when the hammer is at half cock, as set forth.

VALVES FOR HIGH PRESSURE STEAM ENGINES.—Richard Colburn and L. W. Hanson, of Norwich, Conn.: We claim the self-acting valves, K K, connected together as set forth, for the purpose of freeing the cylinder of water and of back steam, in the manner substantially as described.

PRINTING MACHINE—J. H. Cooper, of Philadelphia, Pa.: I am aware that a type wheel, having upon it vertical type, and moving to the paper to give the impression, has been used; this I do not claim.

I claim, in combination with a type wheel having its types radially arranged thereon, and operated as described, the presser bar, U, for carrying the paper to the type to receive the impression, substantially as described.

I also claim the manner of connecting and disconnecting the paper carriage and endless belt, together with the spacing of the lines, by means of the points, i, ratchet wheels, F, brace, M, and its projecting piece, r, so that the belt may run in one continuous direction, whilst the paper carriage may be traversed back and forth, substantially as described.

ANNEALING FURNACE—J. J. Eagleton, of New York City: I claim charging and discharging an annealing furnace in bulk, by means described, and substantially in the manner and for the purposes specified.

SAW MILL BLOCKS—Bela Gardner, of Florence, Mass.: I claim operating or adjusting the blocks or saw mill carriages by means of the screw, F, endless chain, J, and shaft, L, in connection with the pinions, G M, and clutches, H N, arranged substantially as shown and described.

CENTER TABLE—W. O. George, of Richmond, Va.: I claim the said table, called the oracular wheel or unique center table, in combination with the game called "equality," together with the checks; the said table game and checks being fully described and shown; with the exception that I do not claim those parts which, as taken, are well known, and those which are common to the usual round center table.

Nor do I claim that checks are new and of my own invention.

I claim their application in this particular way, and for this particular purpose, and the method or arrangement of them, in combination with the table and game, by which particular effects are produced, or certain results arrived at, substantially as represented and set forth.

ARTIFICIAL DECOLORING COMPOUNDS—Francis Geran of New York City: I claim the use of phosphate of lime, precipitated out of a solution in muriatic acid as an ingredient in a compound of materials for the manufacture of a decolorating coal which other materials may be varied according to circumstances.

SWING BOLT FOR FASTENING SHUTTERS—John Gunner, Jr., of New York City: I claim the use of the bolt lever, A, and hub, c, constructed and operating as described, in connection with the catch plate, B, when the same is cast with the channel, B, the whole being employed in the manner and for the purpose set forth.

GAS RETORT FASTENINGS—John G. Hock, of Newark, N. J.: I claim the attachment of the rail to the retort or other mouth, by means of the hook headed bolts, B B, constructed and applied, and operating substantially as described.

SHINGLE MACHINE—Edward Hedley, of Shelby, N. Y. I claim the formation and invention of the endless feeding bed of bevsled slats, so as to give the required taper to the shingle, as it passes beneath the knives of the revolving cams, substantially as set forth.

HORSE SHOE—John Henderson, of Elmira, N. Y.: I claim arranging a special bearing surface adapted to the rim of the hoof, and terminating in lines converging from the outer to the inner edge of the shoe, upon the bars, c c, with a gradual deflection of the heel, beginning at the converging lines, A' A', and extending to the rear parts of the shoe at B B, as set forth.

FEATHERING PADDLE WHEELS—Harvey Lull, of Hoboken, N. J.: I claim imparting to the paddles of paddle wheels a rotary motion on their axis, substantially such as described, whilst revolving about the axis of the paddle wheel, by means of an eccentric cog wheel combined with and engaging the cogs of the pinions on the shafts of the paddles, the form of which pinions is generated as specified, for the purpose set forth.

TELEGRAPHS—D. E. Hughes, of Louisville, Ky.: I do not claim any feature of any existing printing or marking telegraph, as any part of my invention; nor do I desire to interfere in the least with any heretofore invented. Conceiving that I have made important improvements in telegraphs, I desire protection only for that which is novel and of my own invention.

I claim, first, the holding in place of the attractive power of electro or natural magnetism, as applied to the telegraphic purposes, whether the same be applied in the manner described, or in any similar manner, producing like results.

Second, particularly I claim combining with the permanent magnet, an adjustable spring almost sufficient to sever it from its contact with the soft iron of the electro magnet, and a lever, or its equivalent, which, after the permanent magnet has been separated from the iron by the action of a current, shall bring it back again into renewed contact by the action of the power which has been called into action by the retreat of the magnet.

Third, I claim the employment of two cog wheels or circuit breakers at each station, so arranged that one shall be in connection with the electro magnet at the same station, and the other in connection with the transmitting cylinder at that station, the whole being arranged so that the connection alternates at each station for every letter between the electro magnet and the transmitting cylinder at that station, in such a manner that the through connection is always simultaneously through the transmitting cylinder of one station, and the electro magnet of the other station, whereby the machine at each station can, at the same time, be transmitting a message and receiving a message; it being understood, however, that I do not claim, in general, the use of a single wire for the simultaneous transmission of different messages by means of rapid changes of connection, which is not new, but only the peculiar manner as claimed, in which I have applied it in connection with my machine.

Fourth, so arranging a bolt and operating the same by a cam, or its equivalent, that it shall act upon a wheel attached to the shaft of the type, so as to preclude the intelligence from one station being communicated to any other station or stations on the circuit from which it is desired to withhold the communication.

Fifth, I claim the employment of a vibrating spring properly weighted at its extremity, if necessary, and so arranged by a series of mechanism as to govern and regulate the movement of the type wheel. This I claim also as a governor in other machinery, without limiting its use to its connection with electro magnetism.

Sixth, I claim printing by electro magnetism by a continuously moving type wheel, printing while in motion.

Seventh, I claim the arrangement of a cylinder with pins spirally arranged thereon to operate by contact with metallic points to close and break the circuit, when this is combined, for the purposes set forth with the systems of keys and catches, so arranged that any desired point may be thrown into a position, where it will be retained until it is struck by its corresponding pin.

WIND MILLS—M. S. Johnson, of Palatine, Ill.: I claim the particular mechanical devices, so arranged for the purpose of housing the sails, as and for the purposes set forth.

PRINTING MACHINE—John M. Jones, of Palmyra, N. Y.: I claim the manner of attaching the lever, D, to the wheel, A, so that the same may turn said wheel, while its fulcrum rests upon a fixed plate, N, situated below the revolving wheel, A, allowing at the same time a revolving motion, and a motion in the direction of its axis to the wheel, A, said lever, D, being connected with the mechanism by the rod, S, passing through the hollow shaft of the wheel, G, substantially as described.

The arrangement and use of the lever, C, for the purpose of pressing down the type on the paper, when an impression is to be made, and at the same time insure always the right position of the type and wheel, A, in the manner specified.

I claim the swinging wheel, G, attached to a hollow shaft having projections on its periphery corresponding in number and thickness to the type for the purpose of moving the carriage, L, with the paper attached the exact distance necessary for printing one letter after the other, acted on and arranged in the manner, substantially as described.

WATER METER—N. B. Marsh, of Cincinnati, Ohio: I am aware that elastic diaphragms have been used for various purposes; this, therefore, I do not claim.

But I claim the manner of pinching the diaphragm between the plates, f g, so as to perfectly and at all times pack the joint between the chambers, which it divides, viz., by means of the projecting flanges on each, lapping past each other, and the nuts to hold them together, as represented.

Second, the double reversing valve movement, as described, viz., the two solid cylindrical valves, r s, having their spindles connected by a rocking beam, and playing within tubes, t u, communicating at their ends with the supply and discharge respectively, and with the respective compartments of the measuring cylinder, by means of apertures in their sides.

HYDRAULIC ENGINE—Augustin Miller, of Grafton, Va. I do not claim the invention of hydraulic engines, as they have been used before.

But I claim the combination of the cut-off motion with the relief pipes, c c, as described, for the purpose of cutting off the stroke at any desired stage, without being compelled to waste the power by working the piston against atmospheric pressure, as set forth.

SURFACE CONDENSERS FOR STEAM ENGINES—J. M. Miller, of New York City: I claim passing the water of condensation in or upon the main body of the condensing surfaces on its way to the boiler under the pressure of the steam and the cold external water on the other portion of the surface, as set forth.

GAS GENERATORS—Max Pettenkofer and Chas. Ruland, of Munich, Bavaria. Patented in Bavaria Feb. 24, 1851: We claim the construction and arrangement of the many chambered regenerators for making gas from wood or vegetable fiber, as set forth, whereby the primitive vapors of destructive distillation of wood or vegetable fiber are progressively heated up beyond the heat in the retort, as set forth.

SETTING ARTIFICIAL TEETH—W. G. Oliver and Thos. Harrison, of Buffalo, N. Y.: We claim making the teeth with grooves in their cheeks and attaching them to the plate by fusible metal cast into said grooves, as set forth.

We also claim making the plate and attaching the teeth at one operation by casting, as described.

ELEVATOR FOR COTTON, SUGAR CANE, &c—E. Price, of Water Proof, La.: I claim the arrangement of the table, I, with the carrier apparatus, as described and represented, for purposes mentioned.

FLOATING DRAWBRIDGE—Napoleon B. Proctor, of Burlington, Vt.: I claim the construction of a floating drawbridge by erecting a wharf or dock on each side of, or partly or wholly within rivers or other waters, over or across which such bridge may be required, with a slip in one of said docks or wharves of a suitable size, for the reception of a boat of proper dimensions, viz., nearly as wide as the slip and about twice the length of the open space between the docks or wharves (through which open space vessels may pass and re-pass) which boat, by steam or other power, can be readily worked forward from the slip to the opposite dock or wharf, and thus form a connection therewith and back again into the slip, leaving a space or channel open for the passage and re-passage of vessels, substantially in the manner and for the purposes described.

HANGING RECIPROCATING SAWS—John Robinson, of New Brighton, Pa.: I do not claim merely attaching the lower end of the saw to the pitman, for that has been previously done in cases where the saw has been placed in a sash or frame.

But I claim attaching the upper end of the saw, J, to the pendant or arm, G, which is connected to the upper frame, E, and the lower end of the saw to the pitman, H, just above the point of connection of said pitman with the lower frame, E, substantially as shown and described, for the purpose specified.

MUSIC RACK—Thomas Ward, of Birmingham, Pa.: I claim the jointed or adjustable bar, G, and the bar, F, provided with the blade, L, and attached to the sliding bars, E E, by the sliding springs, e e, the bar, G, having a plate, J, attached to it, provided with a spring, k, the above parts being fitted in a frame, B, which is allowed to fold or be turned in a vertical or horizontal position, the above parts being arranged as shown for the purpose specified

EXTRACTING STUMPS—George W. Zeigler, of Tiffin, O., and Manasseh Grover, of Sandusky, O.: We claim utilizing the weight of tree, while falling, for extracting its stump by the combination of chains and hooks and adjuster substantially as set forth.

CARRIAGE SHAFT COUPLING—James D. Larven, of Columbia, Tenn.: I am aware that the ball and socket or universal joint coupling is old, and that a journal with a spherical enlargement in the center is old, and therefore I do not claim either the one or the other.

But I claim the improvement upon couplings for carriage shafts or tongues, which consist in enlarging the journal of the shaft iron in the center so as to form a globular, ellipsoidal or double conical bearing surface, and clamping the same between the clip irons countersunk as described, by means of screws, or other equivalent devices, so that the wear is entirely upon the enlarged surface, and all lateral play and rattling of the clip irons are prevented.

I also claim in combination therewith the leather packing, as described, for the purpose of retaining the lubricating material.

SURFACE CONDENSERS FOR STEAM ENGINES—Nathan Thompson, of Williamsburgh, N. Y.: I claim, first, an elastic junction of a tube with a tube sheet composed of a thimble on a tube sheet and a short piece of elastic tubing applied thereto, and to a tube end or a collar on a set of tubes, substantially in the manner and for the purposes specified.

Second, I claim uniting firmly several small tubes into a collar, which latter is attached to a tube sheet by means of a slip or elastic joint, whereby several tubes require only a single stuffing-box or elastic junction in order to compensate for their expansion and contraction, substantially as set forth.

And lastly, I claim in conjunction with an elastic junction such as is described, metallic clamping rings, or their equivalents, applied substantially in the manner and for the purposes specified.

EXCAVATING SCOOPS—John Taggart, of Roxbury, Mass.: I claim applying one or two discharges within a pair of scoops, substantially as specified, and so as to operate therewith, or be operated thereby, in the manner and for the purpose essentially as explained.

LINING METAL PIPES—A. D. Puffer, of Somerville, Mass.: I claim the method described of lining metallic pipes with gutta percha, the pipe being drawn down upon the lining in the manner set forth.

ASH LEACHING APPARATUS—Philip Perdew and Alexander W. Brinkerhoff, of Sycamore, O.: We claim the mechanical arrangement and combination of the metallic pen and reservoir with the tube and wooden screw for the purposes set forth, and all else we disclaim.

GAS RETORT CLEANERS—Samuel H. and Matthew C. Walker, of Lancaster, Pa.: We claim providing the retort with a receptacle, D, below its bottom, and applying in connection therewith a scraper, F, arranged and operating substantially as described, to scrape the residuum from the bottom of the retort into the said receptacle, without suspending the operation of the retort.

SAW SET—Edward S. Watson, of Chenango Falls, N. Y.: I claim the arrangement of the side set screws under the bed for the saw plate, and the central adjusting screw for giving to the bed and the saw blade the inclined position, and thus allowing the tooth of the saw to have given to it the curved or twisted face, as set forth.

WORKING IN SHEET METAL—J. B. Holmes, of Cincinnati, O.: I claim the use of corrugated plates, 2 and 3, constructed as described, and operating in connection with the eccentric bending and gauging shafts, 4 4, in the manner and for the purposes for forth.

WEIGHING CART—James W. Martin, (assignor to Lewis Rotherwell and James W. Martin, aforesaid,) of Burlington, N. J.: I claim the levers, E E F H, connected with the scale beam, J, in combination with the bars, I I and J, arranged and applied to the cart as shown, for the purpose specified.

VENTILATING REGISTERS AND DAMPERS FOR STOVES—John Magee, of Lawrence, Mass., assignor to himself and William J. Towne, of Newton, Mass.: I lay no claim to the invention of having an air passage leading into the downward draft flue, and provided with a door opening outward.

Nor do I claim the principle of applying a damper so that it may be common to two or more openings or flues.

But I claim combining with or arranging in the flue pipe, I, when the stove is constructed substantially as described (viz., with two discharge pipes, H I, arranged as specified) a rectangular box or chamber, b, formed with an opening, c, and so as to receive within it and permit to operate in manner as described a rectangular valve or damper, d.

MAKING ROPE AND CORDAGE—Wm. R. Dutcher, (assignor to Harvey Church) of Troy N. Y.: I do not claim the wheels, 7 and 8, and other gearing for giving a larger or smaller amount of twist to the strands, neither do I claim rubbing down or sizing the yarn.

I do not claim regulating the tension of warps or strands by means of a wire or cord in a grooved disk. Neither do I claim a belt or strap running around bobbins as they stand in a circular range for the purpose of rotating such bobbins.

Neither do I claim a revolving tube passing the strands, nor a plate or lay-up block through which the strands pass. But I am not aware that a pipe has ever before been fitted above each lay-up block in such a manner as to regulate the tension of the yarn by adjusting said pipe nearer to or further from the said lay-up block.

I do not claim the grooved cone, t, as this has been used in ropewalks and machinery, also a tube has been used in connection with such cone, therefore I do not claim the same, but limit my claim, as hereafter specified, to the peculiar construction of the parts.

I do not claim leading the yarn or sliver off to one side of the enclosing can; but where bobbins are made use of there must be sufficient distance between the bobbin and the hole through which the yarn passes to allow said yarn to pass off freely; hence in cases where the yarn is led towards the center of the circular range of bobbins, that range has to be so large to provide for the above requirement that the machines become heavy and cumbersome; therefore I lead off the yarns to the opposite side of the range to where the bobbin stands, which provides sufficient distance to cause the yarn to run off with a uniform tension from the top and bottom of the bobbins, and thereby said bobbins can be brought into less space. The holes in the arms thus do not become regulators of the tension by their size, but provide for the yarn being drawn off in such a manner as not to be varied in its tension by any varying angle of the yarn in passing off the bobbin.

I claim, first, the arrangement of the gear wheels, h and i, pinions, 13 and 14, plate, k, and ring, 12, for sustaining and revolving the creel shafts, b, as specified.

Second I claim the adjustable friction wire or cord passing around in the disks of the circular ranges of bobbins, thereby simultaneously regulating all the yarns in each range to precisely the same tension, substantially as specified.

Third, I claim the adjustable tube, 18, over the center of the lay-up block, q, for the purpose of regulating, by its proximity to said lay-up block, the tension of the various yarns composing the strands, as specified.

Fourth, I claim the construction of the lay-up cap, s, on the end of the shaft, c, fitted to receive the movable cone, t, and adjustable tube, 24, in the manner specified, so that the tube and cone can be conveniently changed to adapt the parts to laying up different sized rope or cordage.

Fifth, I claim leading the yarn off from the bobbins to a hole or guide on the arms, 43, or their equivalents, on the opposite side or nearly so of the circular ranges of bobbins in the creel, for the purposes and substantially as specified.

TURNING IRREGULAR FORMS—Milton Roberts, (assignor to himself, Isaac Roberts, and Isaac N. Felch,) of Belfast, Me.: I claim the automatic lathe attachment for turning figured wood work, substantially a transverse and longitudinal movement produced by cranks, G G, and inclined planes, E E, or their equivalents, and tooth rack, D.

LOCOMOTIVE AND R. R. LAMPS—John Stuber, (assignor to John Carton,) of Utica, N. Y.: I do not claim as new the forcing of the oil from the oil chamber into the burner by means of the spiral spring and valve, nor the opegating of the valve by means of the ratchet bar and key as described, as these devices have heretofore been used.

But I claim the tubed structure, A', as combined with the burner to regulate the flow of the air to the exterior of the flame of the lamp as described.

I also claim the arrangement of the feeding cup, t, and the tube, u, provided with the regulating spirally grooved fillet, A, in the manner described and for the purposes specified, arranged and combined substantially in the manner and for the purposes set forth.

DESIGNS.

STOVES—Samuel W. Gibbs, (assignor to W. and T. Treadwell, Perry & Norton,) of Albany, N. Y.

PARLOR STOVES—David Hathaway, (assignor to Cox, Richardson & Boynton,) of New York City.

COOKING STOVES—Thomas A. Herrick, of East Bridgewater, Mass., (assignor to Lemuel M. Leonard, of Taunton, Mass.

Romance of the Steam Engine.

Viewing one of those gigantic engines to be seen in some of our steamers, who will deny that there is something awfully grand in the contemplation of it? Stand amidst its ponderous beams and bars, its wheels and cylinders, and watch their unceasing play, how regular, yet how wonderful! A lady's Geneva watch is not more nicely adjusted,—the rush of the waterfall is not more awful in its strength. Old Gothic cathedrals and ruined abbeys, are solemn places, teaching solemn lessons touching solemn things, but to the contemplative mind, a steam engine can preach a solemn lesson, too: it can tell him of mind wielding matter at its will; it can tell him of intellect battling with the elements; it can tell him of genius to invent, skill to fashion, and perseverance to finish. No man knows the powers of his own mind until they have been exercised. Thousands have sunk into an obscure grave, in whose soul the living fire of poetry, or the bright sparks of genius lay hidden and lost, which merely wanted education to cause them to shed a luster over their race. And in some retired spot, may remain the mortal tenement, from which the soul of an Arkwright, a Scott, a Davy, a Watt, or a Webster may have fled, which merely wanted education and opportunities for this developement. And ought it not to be a lesson to those who laugh at novelties, and put no faith in invention to think that the mighty steam engine—the triumph of art and skill, was once the laughing-stock of jeering thousands, and once the waking notion of a boy's mind, as he sat, and in seeming idleness, mused upon a small column of steam spouting from a teakettle.

Prevention of Steam Boiler Explosions.

In spite of the great amount of information that has been published on explosions, it pains us to hear of so many continually taking place. It appears to us that many of these are caused by ignorance on the part of those having charge of steam boilers. It will be an act of humanity on the part of our brethren of the Press to publish the following instructions to engineers and firemen, as by so doing many steam boiler explosions may thereby be prevented:—

Every steam boiler should have a good water gauge on it; also a steam pressure gauge. These must be watched constantly. There should also be three try-cocks on each boiler, and these should be tried often. The water should never be allowed to fall below the second cock. The safety valve should also be tried often, to see that it is free, as it sometimes sticks in its seat. If by priming, or any other cause, the water should fall below the bottom of the gauge glass, draw the fires at once; but if the plates should have become red hot before this has been noticed, and the fires cannot be drawn with safety, close the dampers at once, and on no account let water into the boiler. If the engine is not at work in such a case, it must not be started, nor must the safety valve, nor any other, be opened. The boiler, in such cases, should be left undisturbed until it has gradually cooled down.

Georgia Factories.

The manufactories in Georgia which started full handed, and were based on sufficient capital, have uniformly succeeded; and even during the terrible pressure of 1850 and '51 there was no failure among them. The manufacturing establishments in that State have multiplied largely within a very few years, and they number now some sixty in the full tide of success. The returns show that the yield on the stock paid in is from fifteen to thirty per cent.

It requires capital to sustain a factory after it is set in operation for at least two years. The beautiful cotton factory at Graniteville, S. C., under the charge of J. Montgomery, Esq., we understand, is doing a very profitable business.

(For the Scientific American.)

Plowing by Steam.

MESSRS. EDITORS—This question is now attracting much attention both in Europe and America, and is destined, at no distant day, to be the leading one in agricultural economy. The plan of the *direct* application of steam power to plowing presents many objectionable features. It involves the necessity of furnishing, at all the fields to be plowed, supplies of fuel and water, and these requirements will prevent forever its introduction in many places. It also renders it necessary that some simple and effectual means should be employed to maintain the water at a proper hight in the boiler when the engine is traveling over very irregular ground. And unless the engine can be afforded at a low price, is adapted to general farm work, and free from liability to get out of "kilter," it will fail to meet the wants of the farmer.

But I believe that steam power may be used economically on all fields that are clear of stumps, but not by the direct application of it. The engine must be stationary, and its power should be applied to the plow or plows through an *intermediate* portable machine. This intermediate conveyor of the power of the engine may be a strong metal spring, or compressed air, &c. The plows should be so attached to the intermediate power communicator that they can be easily attached and detached; and the conveyor of power may be made in the form of a carriage, that can be used for various purposes with horses. This conveyor might also be made to answer for a wagon to carry and spread manure, to sow grain, and plant potatoes. This system, I think, is practicable, but whether it would be economical or not, experiment alone can determine. If it can be applied to plowing it can also be applied to reaping, and might also be useful for propelling carriages on plank roads.

J. W. G.

Grenada, Miss.

[We are of opinion that unless portable steam engines can be applied to plowing or reaping, no other plan will be. Cheap tanks for water may be sunk at certain points around the field, and it would not be expensive to have deposits of fuel placed at those tanks.

The use of a spring as a power accumulator and conveyor from a stationary steam engine, is certainly impracticable; but not that of compressed air, or an arrangement of standards, pulleys, and endless chains, like the working of carriages on some railroad inclines. The compressed air plan, as well as that by endless chains, would involve an immense expense. The amount of tubing required to plow a farm of one hundred acres by compressed air, from a stationary engine at the very center of the farm, would cost more than the whole price of the engine and plows, yea, the whole farm. And it would be the same with the ropes, chains, standards, and pulleys required to be used by the other method named. On level fields, free from stones and stumps, locomotive steam plows may yet be successfully used; but steam plowing by stationary engines we believe never will. At present, however, horses are more econical for plowing, in any part of our country than steam engines, but we hope to see the time when the steam engine will drive the animal power from the field.

Course of the Electric Current in Baths.

MESSRS. EDITORS.—As the subject of the electro-chemical baths, for the extracting of deleterious minerals from the body, is attracting no small degree of attention, as a lately discovered medical agent, any scientific truth bearing on the subject is of interest to the public.

There are two kinds of electro-chemical baths now in use—the full body-bath and the foot-bath. In one the whole body is immersed in the water up to the shoulders; in the other the feet only In the full body-bath the electricity does not pass down through the body under the water, but passes immediately to the metallic sides of the metallic bath tub, along and near the surface of the water. In the foot-bath the electricity passes through the whole course of the body before it reaches the water.

I prove that the electricity in the full body-bath does not pass through the body, by the following experiment: First, provide a large metallic bathing tub, and fill it with water, and let the experimenter immerse his body in the water up to his neck. The body in the bath is to be insulated from the tub by being placed upon a board in the bottom of the tub. Connect the bath tub to the zinc pole of the battery by means of a wire. Let this wire, before reaching the battery, be attached to a galvanometer. Now let the man in the bath take hold of a metallic handle attacted to a wire from the copper pole of the battery, and the needle of the galvanometer is deflected ten degrees. This shows that the electricity has passed from the man's body to the metallic bath-tub, and thence on to the zinc pole of the battery.

Now vary the experiment. Disconnect the galvanometer from the wire leading to the bath-tub. Place against the sole of the foot, at the bottom of the bath-tub, a small metallic plate soldered on to the end of a wire covered with gutta percha, to insulate it from the water and the tub, Connect this wire to the zinc pole of the battery, and attach it to the galvanometer. Now let the man in the bath again take hold of the handle from the positive pole of the battery and the needle still points north, proving decidedly that no electric current is passing down through the body in the bath, but that it has left his body at, or near the surface of the water, and is passing along to the metallic bath-tub, and thence to the zinc of the battery. In this experiment the wire from the bath-tub must also be in connection with the zinc of the battery, as well as the wire from under the man's foot. This circumstance is essential to the experiment, inasmuch as we thereby give to the electric current which has entered the man's body from above the surface of the water, an opportunity to take either of the two directions; that along the surface of the water, or that down through the body and out of the feet.

It is evident, from this experiment, that the foot bath is preferable to the body bath in the eliminatory of minerals from the system, inasmuch as the electric current in the foot bath passes through the whole body, while in the body bath it leaves the body at or near the surface of the water, passing, consequently, only throngh the arms and neck. To perform the above experiment, a battery will be required equal in power to ten of Groves' cups.

SAMUEL B. SMITH,

New York. Electro-Magnetist.

Steam Fire Engines for Cities.

MESSRS. EDITORS.—Men's minds are charged positively or negatively upon every subject, when charged or impressed at all upon any. Every new theory and new experiment introduced and made, are favorably or unfavorably received by this or that community, by this or that circle, by this or that man. It is undoubtedly wisdom that we are created to differ in our opinions, as well as tastes and talents, and personal appearances. But there would doubtless be greater uniformity and agreement of sentiment, upon public and important matters and concerns, did not ignorance and prejudice, differing in amount and strength in us, cause us to differ.

When the Steam Fire Engine was brought to this city, some were positively in favor of it—others were of the negative opinion. But its effect upon the conflagration of the Gerrish Market, staying the flames, and thus preserving the buildings around, changed minds from the negative to the positive order by thousands. Power or force is necessary to extinguish a fire by the application of water. Steam power is the most steady of any: it is not subject to fatigue, and can work incessantly for hours and days. The arm of flesh wearies with much doing. Often men are very much wearied upon their arrival at the fire, from the speed and labor usual at such times, in getting there with their engines. But the steam power can work at first and last, and at all times, with equal force,—summer's heat nor winter's cold affect not its operations. Often it is important that the engine should be placed where man could not endure the heat alone, without labor. Steam power is a compact power or force: it can far exceed all the human power or strength that can be made efficient in the extinguishment of fires. In a properly contrived engine, the power can be so high as to throw more water than can be brought by all the hand engines that can accumulate within working distance of a conflagration. The whole or any less quantity of the power can be used as needed from time to time. The hose can be of various sizes. Often a very small stream of water only is necessary to extinguish a fire, and a large amount of water would do an unnecessary amount of damage.

The introduction of steam power would not be seriously injurious to those who might thus be deprived of the fireman's salary. For this, compensation must be gained at the cost of an interruption to other employment, and often it must fatigue one too much to resume his usual employment, for hours if not days. Men frequently lose their health, limbs, and lives at fires.

G. B. ONSLOW.

Boston, Mass.

[We heartily respond to the sentiments and views contained in this communication. We are advocates of steam power to supersede any severe drudgery labor now performed by men, and we do not know of labor more severe, and requiring more real brute force than that employed to work common fire engines. Firemen have been and are very useful, but it appears to us that modern mechanical genius cannot be more humanely or wisely encouraged and employed, than in the construction and improvement of steam fire engines, to supersede manual labor on the hand engine, and we therefore hope and expect yet to see all our cities supplied with steam fire engines.

The Thomas Iron.—Glass Growing Stronger with Age.

MESSRS. EDITORS—The Thomas Iron Works are located in the valley of the Lehigh. Pa., about eight miles above Bethlehem, the President, C. A. Luckenbach being a resident of this place. It is gratifying to notice, that the iron produced by these works has, in so short a time, gained so good a reputation, as to supersede the Scotch pig iron,—a reputation which the vastness of their mines will enable them to maintain.

In your "Observations" on the reports of the U. S. Officers of Ordnance, it is stated that the strength of cast iron increases by age, until all the particles have found a state of rest. Now it seems the same phenomenon is exhibited in glass. A neighbor of mine being engaged in putting large panes of glass, of the ordinary thickness into the front of a house, found it necessary to cut the glass to the proper size. But it proved a vexatious business to the glazier, for it would not split according to the cut of the diamond in spite of anything that could be thought of, by way of coaxing or inducing it to do so. Thus a large number of panes of glass were cut and broken until the front was filled, and everybody's good diamond was tried. Afterwards the cut and broken panes were set out, exposed to the weather, as entirely useless, it being proved that no matter how good the cut was, the glass would split its own way.

After having spent a long winter under snow and ice, it has, however, become exceedingly well balanced in strength, so that it will break along the cut of a diamond, in narrow strips of any length, or in a serpentine line. I have long known that new glass goods were more subject to breaking than old ones; but supposed that the poorer articles only were sooner broken, while the better ones naturally became older. From the foregoing, however, it seems that an article of glass, though not properly annealed, will, in the course of time, be stronger, as the combining atoms acquire a state of rest.

A. H. R.

[This information is important and useful. There is still a boundless field before us for invention and discovery. Observation is the parent of discovery. Every atom of information, like the foregoing respecting glass, is a carved stone fitted for a worthy place in the temple of science.

Examination of Engineers.

A correspondent, G. Forrester, of New Orleans, makes an inquiry regarding the rules employed by Inspectors for examining engineers, for the purpose of granting licenses. He asks, "What are the standard rules of qualification for engineers?" and states that these rules ought to be made public, for the information of those who may desire to apply for licenses. We think so, too. We do not know what rules of engineering qualifications the Inspectors have adopted.

Casting Cannon with Cores and Cooling them Inside.

MESSRS EDITORS—I observe in a recent number of the SCIENTIFIC AMERICAN a conflicting claim to the invention for cooling cannon in the interior, by means of a hollow core. On referring to the foundry records of these works, I find that eight-inch guns were cast on hollow cores, under the supervision of Lieut. Rodman, in 1846, as follows:—April 13th, July 18th, and August 4th. In the two former, cold air was circulated through the core; and in the last one, cold water was circulated in like manner. Since that time, numerous guns have been cast on hollow cores, and cooled interiorly, by circulating water through them.

I mention these facts in Justice to Captain Rodman, who is now serving at a remote southwestern military post, where he may not see any notice of this claim to his invention.

Respectfully yours, W. WADE.

Fort Pitt Iron Works, Pittsburg, Pa.

The Steamboat Isaac Newton.

This steamer, which runs between New York and Albany, has been lengthened 60 feet, and now reaches the extraordinary length of 404 feet. Her beam is 41 feet. The lengthening was made amidships, under the superintendence of John Ingliss, and was accomplished in thirty working days.

The cabins and saloons are being made on a magnificent scale: the after saloon contains 112 berths and 56 state rooms, and is beautifully decorated in the Gothic style of architecture. Its length is about 106 by 22 feet, and is 25 feet high. The dining room is about 200 feet by 38 feet, and is finished tastefully in the Corinthian style. The middle saloon, which is in the part that has been added, is 230 feet long; the berths are 6 ft. 2 in. by 4 ft. 6 in. The rooms are all well ventilated, and will be exceedingly capacious and comfortable.

A novel feature in this steamer is her cabins and saloons being lighted with gas made on board, and contained in gasometers. There will be an aggregate of 180 lights, which, doubtless, will conduce much to the comfort and cleanliness of the ship.

The *Isaac Newton* has one beam engine, built at the Allaire Works, New York, in 1846. The principal details are:—Cylinder, diameter, 5 feet; stroke, 12 feet; main shaft journals, 18 1-2 in.; wheel, diameter, 39 feet.; No. of revolutions per minute, 15.

A new air pump is being put in, and with some other smaller repairs the whole engine will be very strong and compact. Two new boilers have been put in by Messrs. Secor, New York; they are a good piece of workmanship, being very strong and well braced. The following are a few of their details:—Length, 43 ft.; width, 13 ft. 6 in.; hight, 12 ft. 9 in.; round shells, 17 feet diameter, 33 ft. 9 in. long. Two furnaces to each 8 ft. 6 in. long., 6 ft. 3 in. wide, 5 feet 8 in. high. 10 lower or first action flues, 8 of 16 in. and 2 of 24 in. diameter; 6 upper or return flues, 18 in. diameter each; connections, 6 feet in the clear; two bridgewalls, 30 inches below the top of the furnaces. The shells, &c., are constructed of No. 1 and No. 2 iron; the flues of Nos. 3, 5, and 6. Each boiler gives 2612 square feet of heating, and 106 square feet of grate surface. The boilers, without grate bars, weigh upwards of 98,000 lbs. each.

The *Isaac Newton*, when finished, will be a specimen of American enterprise: elegance, capaciousness, and comfort, are all combined, and what with these, and her great speed, she will assuredly become a great favorite, and carry a great number of passengers the ensuing summer.

Hachish—an extract of Indian hemp—is eaten like opium by the Hindoos, and produces a drunkenness which makes minutes seem like hours in length.

New Inventions.

Elliot's Compound Governor.

This invention consists of a combination governor, which is composed of a speed of a governor and a resistance governor, so combined to act upon a throttle valve or its equivalent, by which the steam or other motive agent is supplied to an engine or other motor, that each shall exert its proper effect without interfering with the action of the other.

Fig. 1 is a projection of the resistance governor. Fig. 2 is a perpendicular section between the two disks. Fig. 3 is an elevation of the compound valve and speed governor. Fig. 4 is a plan of the compound valve. Similar letters of reference indicate the same parts in the several figures.

This governor was invented by General Poncelot, 1830, and published in his *Lecons de Mecanique Pratiques a l'ecole d'application*, but it was not then, as now, combined with the speed governor.

The resistance governor may be applied directly to the main shaft of the engine or motor, or to any intermediate shaft between it and the machinery, but preferably to a shaft of the last named kind, when such is used. This shaft is represented by A. The principal parts of the governor are two disk wheels or heads, B and B', of equal size, and a slide, C. The disk, B, is firmly secured to the shaft, A, and the disk, B', forms a part of the main driving pulley or gear wheel, which receives the power from the engine, as represented in fig. 1. The disk, B', is capable of turning, to some extent, on the shaft, A. The two disks are placed close together, and their opposite faces are furnished with similar or corresponding projections of those which on disk B are marked *a a*, and those on disk B' are marked *a' a'*; attached to either disks are a series of springs, *b b b*, which act between the projections of the two disks in opposition to the driving power applied to disk B', so that when power is applied to drive the machinery it is transmitted to disk B by the springs. The disk, B', is cut away at two opposite parts of its periphery to receive two plates, D, which are secured to it, and contain grooves, *c*, which run obliquely or spirally to the shaft; these grooves are for the purpose of receiving stud, *d*, formed upon the ends of the bolts, *e e*, which are firmly secured to the arms, E, on the slide, C, and which slide freely through holes bored through disk, B, to receive them. The slide, C, consists of a hub fitted to slide freely along the shaft, A, at the back of the disk, B, and furnished with two arms, E, for carrying the bolts, *e*. The hub is grooved to receive the fork of the lever, F, which is attached to the valve gate or cut-off by means of rod, *g*, upon which the governor acts to control the speed.

Fig. 2 represents the face of disk B, and also the projections of disk B', with the springs in their position between the disks. The broken projections, *a a*, belong to disk B, and the projections *a' a'* belong, as they are represented, to disk B'.

The resistance governor operates in the following manner:—When the motive power is applied through disk B', the springs, *b b b*, yield more or less, in proportion as the resistance increases or diminishes; thus the disks are caused to advance or recede relatively to each other. These changes in the relative position of the disks cause the spiral grooves, *c*, on disk B', to act upon the bolts, *e*, which slide through the disk, B, and move the slide, C, along the shaft, and thus, through the agency of lever F and rod *g*, to operate upon the throttle valve, gate, or cut-off, in the required manner and degree to govern the speed.

The compound valve, G, represented in figs. 3 and 4, is in the form of a hollow cylinder, open at one end and closed at the other. It fits over the end of the steam pipe, H, which brings the steam from the boiler, and is enclosed in a valve box, I, (a portion of which is broken away to show the valve) in which it is entirely surrounded by steam, the said valve box having an outlet, J, for the passage of the steam to the cylinder of the engine. The end of steam pipe, H, is closed, but there are slotted openings, *f*, on opposite sides, which correspond with openings, *h*, in the valve The lever, F, is connected with the valve rod, *g*, so as to move it longitudinally upon the pipe, and in that way by changing the longitudinal relations of the openings in the valve and pipe, to vary the effective opening in proportion as the resistance of the machinery varies.

The speed governor is connected with the rod, *g*, but in such a way as to turn the valve on the pipe, and thus to change the relation of the openings in a circular direction.

Fig. 4 shows the manner in which the speed governor opens and closes the valve. The toothed segment, K, is attached to, and turns to some extent upon the valve box, I, and is connected with the speed governor by means of shaft *k*, and endless or worm gear, *o*; rod *i* is firmly fastened in the segment, K, and passes freely through the small arm, *n*. This arm is secured to valve rod, *g*, so that when the segment is turned by the shaft, *k*, the valve rod, *g*, is also turned by means of rod, *i*, and arm, *n*, so as to operate the valve in a circular direction. By this arrangement the two governors act independently of each other upon the motive power, providing equally for any change in the amount of power or change in the resistance, however sudden, producing thereby a perfectly uniform speed under all circumstances.

The compound governor may be applied to the water wheel, by so constructing the gate as to open and close the channel of power by means of two slides moving in a direction at right angles to each other, one still being attached to the speed governor, and the other to the resistance governor.

The compound governor applies with peculiar advantage where the resistance of the machinery driven is subject to great and sudden changes, as the resistance governor opens or closes the valve on the instant the change takes place, without waiting until the speed is changed before the necessary alteration in the motive power is effected. The resistance governor being a sort of spring balance, by which resistance is accurately weighed and its equivalent of power made continually to bear upon said resistance, however much or rapidly it may change. It also applies with equal advantage to those manufactories where irregular speed injures the machinery or its product, particularly where it is necessary to run the machinery considerably below its maximum speed, lest the unavoidable irregularity of the speed governor, when used alone, should occasionally raise it so high as to destroy, or at least injure the article of manufacture, as the throwing off of any heavy piece of machinery would not occasion any increase in the speed of the rest.

For further information apply to or address the inventor, W. H. Elliot, Plattsburgh, N. Y.

IMPROVED COMPOUND GOVERNOR.

Fig. 1

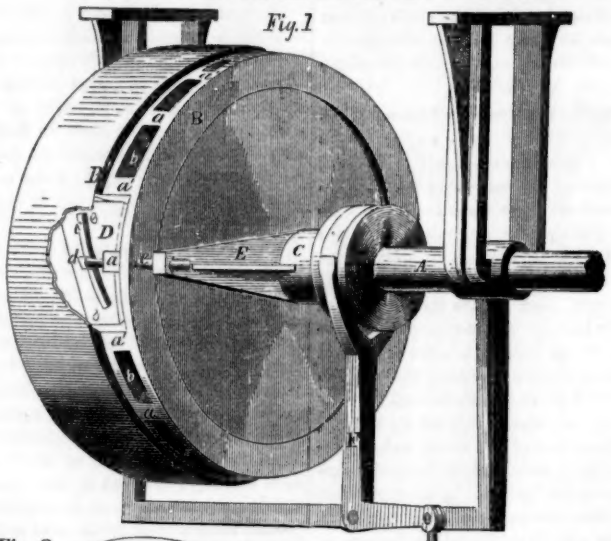


Fig. 2

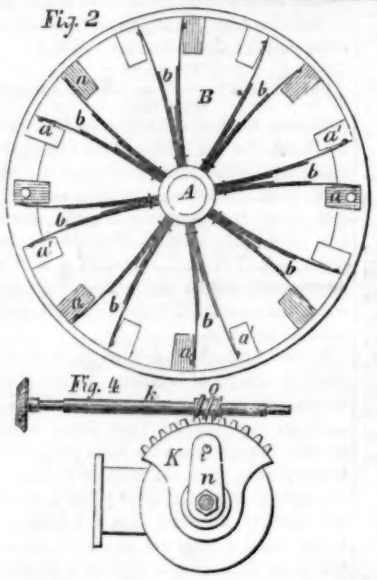


Fig. 3

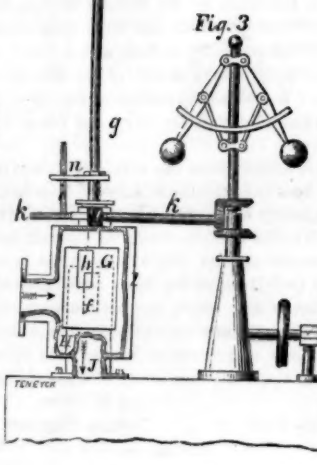


Fig. 4

Washing Silver Ware.

It seems that housekeepers who wash their silver ware with soap and water as the common practice is, do not know what they are about. The Philadelphia *Ledger* states that the proprietor of one of the oldest silver establishments in that city, says that "housekeepers ruin their silver by washing it in soap suds; it makes it look like pewter. Never put a particle of soap about your silver, then it will retain its original luster. When it wants polish, take a piece of soft leather and whiting and rub it hard."

Porpoise Skin Leather.

At a recent meeting of the London Society of Arts, some leather made of the skins of white porpoises was exhibited. Some pairs of boots had been made of it. It was equal in softness to calf-skin and far more durable.

New Land Measuring Instrument.

In No. 32, present volume, of our paper, we presented engravings of a neat little pocket instrument for measuring surfaces, the invention of Mr. Louis Young, of New York City. We there stated that the same principles of construction were applied, on a larger scale, to the measuring of land, and surveying purposes generally.

Our engraving illustrates the adaptation of the improvement as a land measuring instrument. It consists of a pair of light ornamental wheels and frame, made in the form shown. Within the hubs, A, is an eccentric, the rods of which extend through the hollow side pieces, B, to the registering disks at C. The disks at C are divided into links, chains and fractions of the diameter of the measuring wheels. Every revolution of the wheels moves the disks one cog. In use the surveyor pushes the instrument before him over the surface of the ground, and when a given point has been reached, the disks at C will indicate correctly the precise distance traveled. The use of the chain, with its tediousness, halts and starts, calculations and adjustments, is avoided, much time saved, errors prevented, &c. Above the wheels there is a wicket framing or basket, in which various surveying instruments and other articles may be carried. The method in which this improvement operates

to register and keep account of the distance traveled will be clearly understood by reference to the former engravings in No. 32.—Their cost is from $50 to $75. Patented Nov. 20, 1855. Address the inventor, No. 1 Whitehall St., N. Y., for further information.

A light gilding of gold may be put on polished iron, by brushing it over with a solution of gold in sulphuric ether. The blades of knives, &c., are often gilded in this manner.

Scientific American.

NEW-YORK, MAY 31, 1856.

The New Patent Bill.

Inventors and sound thinking men, interested in patents and improvements, with whom we have conversed during the past week, are decidedly opposed to the New Patent Bill. The Press of our country, too, which has always very generally sympathized with inventors, is opposed to the Bill. Our editorial brethren, who have read it carefully, believe it to be unworthy of the present enlightened age, and opposed to the democratic nature of our institutions—some of their views we present in another column. The general feeling among inventors, and the honest assignees of patents, respecting it is, that "it appears to be framed for annoying and injuring them." It provides for such a tedious and expensive variety of processes for patents, that if it became a law, it would undoubtedly operate to retard improvements in the arts. Any law that would exert such a tendency, would be a public calamity; therefore, the interests of the people demand them to oppose it, and this they do. The object of any amendment to the patent law should be to lessen the number of processes through which patents have to pass; also to render those processes more simple and less expensive. The spirit and provisions of the new Bill, are of the opposite character.

The first sections of the new Bill, providing for the raising of the Patent Office into a U.S. Court, to try cases of priority in invention, and increase the expenses of the office enormously, is not required at all. The same ends could be obtained in a more equitable manner, without any extra labor on the part of the Patent Office. The way to do this, would be by a provision requiring every applicant to furnish the testimony under oath of two witnesses, respecting the *exact date* of the invention represented in the model and drawings for which a patent is applied for. Upon this evidence of priority, let the Patent Office decide every case presented, and let that end the matter in that quarter. This plan would prevent the possibility of manufacturing evidence for particular interfering cases, and would simplify the business of the Office.

The *confirming* clause of the Patent Bill is certainly a disgraceful feature in it. The sum of $100 is charged to perform a certain act regarding a patent, while *it* (the patent) bears upon its face evidence that it had been already confirmed. Thus every patent bears the signature of the Secretary of the Interior, and the Commissioner of Patents, and it is stamped with the seal of the Patent Office. Have not these gentlemen thus confirmed the patent as a legal instrument already, and is it not so held by all the Courts? Certainly. Then why charge $100 for a work of supererogation? Such a provision in the Bill is a hundred dollar insinuation, (to be paid by the patentee,) upon the integrity of those who administer the affairs of the Patent Office. In fact, such a provision in the Bill is neither more nor less than a declaration that all patents are to be suspected of illegality or fraud until they are *confirmed*. Poor patentees would never be able to sell their patents under such a Bill until they were confirmed. It would therefore do them rank injustice, and tend to make them lose their patents altogether, as they would never be able to pay the extension or confirming fees. The Bill should not pass, and will not pass, for the united voice of the people and press is against it.

Agencies for Selling Patents.

We are frequently inquired of as to agencies for selling patents, many persons supposing that we are engaged in that branch of business. We wish to state that we are not thus engaged, never have been, and never mean to be. We find our hands as full of occupation as we could wish, in our legitimate business of obtaining patents; with their sale we have nothing to do.

There is no reason, however, why agencies for selling patents ought not to succeed well and in some instances they do. The business is a legitimate one, and when conducted honestly and honorably can hardly fail to result satisfactorily, both to the purchaser, the patentee, and the agent. Quite a number of agencies for negotiating patent sales have been opened during the past few years; among them is that of Mr. T. H. Leavitt, No. 1 Phœnix Buildings, Boston, Mass., and Ellsworth & Co., No. 64 Randolph st., Chicago, Ill. We have confidence in these gentlemen, and therefore mention their names for the benefit of inquiring readers.

The number of patents issued increases every year, and agencies for their sale are springing up in every city. The demand for new inventions was never greater, and the prices realized for patents never so high as at present.

OPINIONS OF THE PRESS ON THE NEW PATENT BILL.

[From the New York Express.]

The New Patent Bill.

The Boston *Bee* points out the following prominent objections to the Patent Bill introduced into the Senate by Senator James.—Such objections deserve the serious attention of members of Congress, and if the measure is calculated to lead to much mischief, the end may be the overthrow of all laws for the protection of inventors. As it is, the discoverers of ingenious works of art are about the last to receive the benefits of their inventions. In the main, assignees reap the profit of other men's brains and labor, and it has been so in this country for fifty years past.

[From the Boston Daily Bee.]

Some days since a telegraphic dispatch from Washington was published in Boston, sent most industriously over the country purporting to represent this bill as one calculated to protect the public against dishonest patents, and on the other hand, the meritorious inventors against dishonest pirates. This is indeed a very easy kind of bill to frame, and every way desirable. We have read the bill itself, and according to our reading this bill of General James, does just the opposite. It takes from the meritorious inventor and gives to speculators on both sides of the water, creating a system of monopoly wholly at variance with the Constitution and the simplest dictates of common justice, and taken as a whole is the most objectionable patent scheme ever yet attempted. It violates the Constitution of the United States by giving patents to mere introducers of new inventions from other countries. It forever in effect bars the public from testing the question of novelty by a jury. It gives unlimited, final, and dangerous powers into the hands of the Commissioner of Patents. It affords no substantial means of repealing a fraudulent patent, and never at all after the second year, and before the patent can be sufficiently introduced to attract attention.

It prevents the meritorious inventor, who has failed to acquire a reasonable compensation for his money and time expended in introducing his invention, from any benefits therefrom when extended, as it gives assignees and licensees in the extended patent the benefit which was always designed solely for the original inventor.

It places all manufacturers, railroad, steamship, and other proprietors of public travel at the mercy of patentees after the fourteen years have expired of all existing patents, unless a special contract shall have been made for an extension, and acts as a surprise upon innocent parties. It will tend to interminable litigation, complicating still more the old system, which only lacked the *scire facias* to make it a good system of laws.

For one inventor benefitted by it, this bill would seriously impair the rights of twenty present patentees. The greatest beneficiaries, indeed, almost the only ones, are assignees of patents, for whose especial benefit this scheme seems to have been got up.

It proposes a system of stealing from other countries, and making the thing stolen a monopoly in this, against the use of the true author, who might desire to patent his discovery in the United States. It opens the door to fraud and oppression a hundred-fold wider than the present system.

It proposes by legislation to debar the subjects of Great Britian the right to take out a patent in the United States, if under British rule one of her colonies does not chance to have a system by which American can make a monopoly in such Province. The same effect towards other countries similarly situated.

It is alleged that those under whose importunities this thing has been brought forward intend to lavish unlimited wealth to carry it through. Will they? That is the question.

[From the New York Herald.]

A New Patent Trap.

Senator James, of Rhode Island, as Chairman of the Committee on Patents, introduced in the Senate a new law on the subject. We have received a copy of the bill and examined it with some care. We trust that Members of Congress will follow our example. It is well known that the owners of several patents, worth millions of dollars, such as Colt's, Woodworth's, and Goodyear's, have been endeavoring, for the past two sessions, to get an extension. So far they have failed, but it seems to us that this law hides an attempt to extend them. The Colt and Goodyear patents were issued for fourteen years, and the sixth section of this act provides as follows:—

And be it further enacted, That from and after the passage of this act, every patent, except such as by this act are limited to seven years, shall be granted for five years. Upon the application of any patentee or assignee of a patent for the extension of a patent so granted, previous to its expiration, and on payment of one hundred dollars to the credit of the Patent Fund, the Commissioner of Patents shall extend such patent for a term of fifteen years, which extended term shall be subject, however, to the conditions and restrictions for the confirmation of such patent, and the proceedings for annulling such patent hereinafter provided in this act. And all patentees and assignees of patents which are now in force, may, after the lapse of five years from the date of the letters patent, avail themselves of the provisions of this act: *Provided*, That the term for which such patents may be extended shall not exceed the term of twenty years from the date of issue of the original letters patent; and in no case shall any such patent be renewed or extended after the expiration of said twenty years. *And provided, further*, That no patent granted under the third section of this act for an invention not original with the patentee, or for a design, nor any registry patent, shall be extended for a second term.

The proviso, "that the term," &c., will extend all the old patents six years. By the provisions of the thirteenth section it is made the law that the right to extension can only be controverted by the validity of the patent. We trust that the members who are, as John Van Buren says, "opposed to stealing," will look sharp after this law.

[From the New York Sun.]

Proposed Change in the Patent Laws.

A Bill for the amendment of the Patent Laws, by which several very extraordinary and dangerous changes are sought to be enacted, was read in the United States Senate by Mr. James, of R. I., on the 10th inst., ordered printed, and passed to a second reading.

The existing patent laws, it is well known, are extremely simple. To obtain a patent the applicant deposites a model, drawings, and pays a fee of $30. This is the whole process. Nothing more is needed. This simplicity and cheapness, by placing the obtaining of patents within the reach of all classes, has stimulated and encouraged invention among us to a marvellous extent. The whole world pays homage to American ingenuity. Our patent system, harmonious and successful in its operations, stands to-day a model for every government in christendom.

In the face of these undeniable facts, and in the midst of the greatest prosperity, so far as respects new inventions, patents, and patent property, it is proposed, suddenly, to subvert the established order of things, to undermine the market value of new inventions, and to discourage our citizens from seeking patents.

The new Bill proposes to increase the official fees from $30 to $210—in cases where six claims are made—or seven-fold; to destroy the simplicity of obtaining and holding patents by surrounding them with interminable legal quibbles and forms, which render the employment of lawyers and agents indispensable, but for whose services the inventor must roundly pay; to deprive patentees of the last fourteen years, who have assigned their patents, of the existing right of extension; to make worthless patents valuable, and invalid patents sound.

This bill also converts the Patent Office at Washington into a huge government printing warehouse, and exalts the Commissioner of Patents into an absolute petty monarch. It makes him the judge and jury in all patent cases, and authorizes him to appoint agents throughout the land, who are to have the power to punish people, by fine and imprisonment, for contempt of them, or the mandate of their new ruler.

Such are only some of the evils which this new bill appears designed to inaugurate. Its principal object seems to be to give extension, under disguise, to certain profitable patent monopolies—relating, in part, to pistols and india rubber,—that are now about to expire, and can be renewed in no other way. The people have not asked for any such changes as are contained in Senator James' bill, neither have inventors. They are not wanted; they are wrong; and therefore should never be introduced. The present system has worked, and still operates most admirably. "Let well enough alone," or at least alter only so as to amend and simplify, if that be possible.

[From the New York Times.]

Senator James' Patent Bill.

When the exciting topics which are now engrossing the attention of the Senate shall have been disposed of, the very remarkable bill introduced by Senator James, of Rhode Island, on the 9th inst., to amend the Patent Laws, will doubtless come up for consideration, and cannot fail to elicit a warm discussion. Mr. James' bill proposes certain changes of so radical and startling a character, and which must affect so many important public interests, that it will not be permitted to slip through the Senate without a searching investigation. The bill has an innocent look enough on its face, but a close examination of its principles will show that the amendments which it proposes to the existing laws are not calculated to promote the public good, though they may possibly be of great profit to certain individual interests.

Recent American Patents.

Artificial Stone—By Robert Neisch, of New York City.—This invention consists in calcining a quantity of plaster of Paris, and mixing with it sulphuric acid, a solution of alum, carbonate of ammonia, and sand. The paste thus formed is pressed into molds of any desired form. After a short time it hardens into a species of stone, which water or moisture, it is said, will never affect.

Improved Brick Machine.—By Edmund Kingsland, of New York City.—The molds are arranged on a rotating cylinder. In most of the brick machines of this class the mold cylinder is made very large, and the finishing is done by smaller rollers. The chief novelty in the present improvement, consists in employing a segment cylinder to do the finishing, and in causing the face of the segment to pass with a scraping movement over the molds. This arrangement permits the use of a mold cylinder of much smaller diameter than is usual, reduces the expense, results in better work, &c.

The molds are furnished with pistons for regulating the depth, and also for pushing out the bricks. By a peculiar device within the mold cylinder, all of the pistons are moved simultaneously.

Solder-iron Stove.—By James Wilson, of Brandywine, Del.—Consists in extending hollow tubes from the outside of the stove into or through the center of the fire. The solder irons are heated by placing them within the tubes. This improvement permits the use of anthracite coal with success, saves fuel, heats the irons better, &c. It appears to be a very good and useful invention.

Improved Vise.—By Orlando V. Florey, of Yellow Springs, Ohio.—The jaws of this vise are constructed in the usual way, the stationary jaw, B, requiring to be firmly secured to the bench, A. Instead of a screw, a simple, round rod, D, passes through both jaws. To the lower end of movable jaw C a rigid brace, G, is secured, extending up through a slot in the stationary jaw to the end of rod L, which it embraces by a fork, as represented, so that jaw C cannot move without also moving rod

D, and brace G. The upper end of brace G is sharpened so as to mesh into the notches of rack I, which is secured to the under side of the bench. The brace, which thus becomes a pawl to the rack, should have sufficient vertical play to enable it to enter and be disengaged from the rack, but no more. A notch and pin, H, may limit this motion. A few coils of screw thread are cut on the outer projecting end of rod D, on which a nut, E, fits; this is provided with the ordinary winch or handle used for turning the screw of a common vise, and with a flange, *b*, around the edges of which, hooks, *c c*, pass, to keep the nut in contact with the jaws.

When the jaws are free, the weight of the brace, G, keeps it disengaged from the rack I, and consequently the movable jaw may be pushed in or drawn out by simply sliding it along. But when any article is placed between the jaws, and the movable jaw is pressed against it, the lower end of said jaw is thereby pushed inwanrd toward the movable jaw till the ratchet brace enters one of the notches of the rack, I. A turn of the nut, E, then tightens the jaws upon the article, the stronger the pressure against it, producing a corresponding increase of pressure of the brace, G, into the notches of the rack, so that the article is again set free; by turning back the nut, E, the ratchet brace falls from the rack, and the vise is free to be opened or shut by simply sliding the rod, D, and movable jaw, C.

This vise accomplishes two objects most desired, viz., to open and shut the jaws by an instantaneous movement, requiring only a turn or two of the winch simply for tightening, and to keep the jaws parallel. It not only effects the latter purpose, but permits the movable jaw to be adjusted to an exact parallelism with the other jaw, or to vary but slightly therefrom. And withal, its simplicity is such that the cost of the manufacture is less than that of the ordinary screw vise. It is equally suitable as an iron and wooden vise for the smith or the carpenter. More information may be obtained by addressing Messrs. Florey & Davis, Yellow Springs, O.

Improvement in Gas Retorts.—By John G. Hock, of Newark, N. J.—The object of this invention is to enable the heads of the retorts to be more handily and quickly attached and detached than the mode of fastening them, at present in general use admits. Another object is, to enable the fastening to be readily detached from a worn out retort and applied to a new one. The neck of the retort is cast with a strong lug on each side, close to the mouth, said lug having a square hole through them to receive the square shanks of two hook headed bolts, which, with a bail and an inclined projecting rib, on the outside of the retort, constitute the fastening.

Improved Head Block for Saw Mills.—By Bela Gardiner, of Florence, Mass.—The ordinary head blocks of saw mills must be moved by hand after each board is cut. This improvement consists in rendering the head blocks self-moving so that the labor of an attendant for that purpose is not needed. It is done by means of an endless chain and pinion screw connected to the driving machinery. The log, after being properly placed upon the carriage, will be all sawed up into boards without stopping the saw.

New Method of Hanging Saws.—By John Robingson, New Brighton, Pa.—Consists in hanging the saw frame between the ends of vertically vibrating arms, so that the saw, in its descent, will be thrown forward against the stuff, but in its ascent will be drawn back, away from the wood. This improvement is said to render the saw more effective in cutting, to consume less power in rising, afford better opportunity for the dust to be cleared from the cut, &c.

Weighing Apparatus for Carts.—By James W. Martin, Burlington, N. J.—Consists in the attachment of a weighing apparatus to common carts, so arranged that by pressing a lever the cart body and its contents become separated from the wheels and swings on a scale beam, by which it may be accurately weighed. No change in the form of the cart is made. The common use of such vehicles would put an end to cheating in the weight of coal and other articles, for the consumer could himself weigh them, before his own door.

Music Rack.—By Thomas Ward, Birmingham, Pa.—This is a frame for holding up music books, and is intended to be placed upon pianos, organs, and other instruments. One feature of novelty consists in the facility with which it slides from side to side, so as to accommodate the position of the performer.—Another feature is an action which turns the leaves of the music. This is done by a spring and wires. By touching a pin, and the leaf instantly turns. The invention contains other interesting features. We have an engraving in preparation, which will shortly be published.

Husking Thimble.—By J. H. Gould, of Deerfield, Ohio.—In the operation of husking corn it is common to take the ear in one hand, and with a finger nail of the other, to slit the husk lengthwise, so that it may be more easily torn off. This method wears away the nail and excoriates the end of the finger, rendering it so painful that the operator is obliged ere long to quit work.

The present improvement consists of a thimble, A, the bottom part of which is furnished with a small cutter, B. The thimble is worn upon the finger and used in place of the nail. It is an effectual remedy for the evil above mentioned.

Recent Foreign Inventions.

Air Springs.—A patent has been received by T. Macintosh, of London, for rendering membraneous tissues, such as bladders and skins, air tight, whereby they may be formed into bags, and made into air springs like india rubber. Skins or bladder tissue are steeped or some hours in solution of glycerine and glue, and then taken out and dried. After this, such tissue can be formed into a bag, filled with air and placed in a cylinder in which a piston is inserted for the purpose of forming an elastic air spring. The object of the invention is to use such springs for railroad cars, &c. Air springs of the same nature, but formed with india rubber air bags are old and have been illustrated in a back volume of the Scientific American, and are of American origin, but the preparing of skins and membraneous tissues, as described, to render them as air-tight as india rubber, is a new process, and if it accomplishes the object specified, it is a useful discovery.

Steel Pens.—Mr. Macintosh has also taken out a patent for making steel pens with two nibs—one at each end of the pen—so as to have two pens on one piece of steel. The penholders are made to receive the nib end of such pens, and not injure them, and when one nib is worn out, it is turned round, as it were, and the other used. This invention possesses the merit of saving steel pen material.

Air Gas.—A. Longbottom, of London—formerly a resident of New York—has obtained a patent for constructing retorts for making gas from oil, with an interior cone in each, and convex on the outside, to contain the fire. Each retort has also a false perforated bottom, under which is placed a mixture of charcoal and lime. The oil is permitted to enter the retort and drop on the red hot apex of the cone, when it is converted into gas. The gas cannot get out without passing through the perforated bottom and amongst the heated mixture of charcoal and lime, which tend to purify it. From the retort it passes to the cooler, where it is washed with water, and from thence into a receptacle for use. The inventor was engaged in this city some five years ago, in endeavors to improve portable oil gas apparatus and introduce them into use. Cotton and other factories are now illuminated with oil gas made from crude resin oil, which can be obtained very cheap.

New Tooth Powder.—J. P. Garbai, of Paris, has obtained a patent for a new tooth powder said to possess wonderful virtues over all others heretofore used. It consists of salt mixed with iron in solution, coffee, chicory, sugar, rice flour, saffron, rhubarb, cream of tartar, and powdered ivory. About two grains of the sphate of iron is mixed with an ounce of common salt in solution; the water is evaporated by heat, and the residue is mixed with the other substances named—about one-fourth of each according to the quantity of salt being used. This may be a good tooth-powder, but it is certainly a complicated one, and no better, we think, than are made of common salt, sugar, and whitening, in about the proportions of one-fourth of the sugar and whitening, by weight, to that of the salt. These ingredients should be ground all together to a fine powder in a mortar. Charcoal may be substituted for the sugar.

Cod Liver Oil and Chocolate.—F. H. Lebargire, of Paris, has obtained a patent for mixing cod liver oil with chocolate, and forming the compound into cakes. The oil is mixed with the chocolate in grinding the latter. This is stated to be a pleasant mode of using cod-liver oil by invalids.

Engineers, and Steam Boiler Explosions.

This subject is always coming up in some new form requiring constant watchfulness and discussion, because it is of such vast consequence to the safety and welfare of thousands of our people. The boiler to which we alluded last week, as having recently exploded at Albany, N. Y., requires to be noticed at some further length. It was a large boiler, weighing five tuns, capable of generating steam for a seventy-five horse power engine. The testimony regarding the quality of the iron, and the manner in which the boiler was constructed, is contradictory; but, on the whole, we would infer that the iron was pretty good, and the workmanship not of an inferior character. It had been managed, however, with a great disregard to safety. It was put up in February last, was never tested, and had no gauge on when it exploded. T. Merritt, the foreman of Pruyn & Lansing, at whose shop it was built, gave it as his opinion that the explosion was caused by the want of water in the boiler, and then injecting cold water into it when over-heated.

Some engineers testified that the iron of the boiler was bad, but all agreed that the water had been low in it, and the universal opinion of engineers, examined as witnesses, was "that cold water had been injected into the boiler while in a heated state, for want of water, by which certain gases were generated which caused the explosion." This is the point to which we wish to direct the attention of engineers. D. Gage, an engineer, gave his testimony to this being a cause of explosions; so did Theodore Merritt, so did Louis Provost, who also said he heard so from scientific men; and so did W. S. Low, who also added that steam alone could not have produced such an explosion.

About three tuns of the boiler, in one piece, was projected into the atmosphere like a rocket, and large pieces of other parts of it were driven nearly a mile distant; and the shock was like that of an earthquake in Albany. The explosion was of such a violent character, that no wonder the engineers who testified upon a stock of common information regarding steam, attributed it to certain gases generated in the boiler; in other words, they did not exactly know how it could have been produced by common or uncommon causes.

We are of opinion that the construction of the boiler was good, and that the explosion was caused by the sudden generation of a great steam, not gas, pressure, by injecting water into the boiler while in a highly heated state from want of water. It appears plain, from the evidence, that the water in the boiler had fallen below its proper line, and that the fire acted on the plates above the water, and had raised them to a high temperature—red hot, perhaps. The steam above the water in this case would then become super-heated, and when water was injected into it, a sudden generation of steam would take place, and at a pressure far above that at which the boiler was contracted for to withstand, viz., 125 lbs.

Experiments have proved the possibility of heating steam in contact with water, without increasing the temperature of the latter. Steam heated in a boiler by hot plates above the fixed water line, if raised to a temperature of 435°, and water suddenly injected into it, will raise the pressure instantly to 360 lbs. on the square inch. If steam were heated to 1000°, its pressure would only be increased three-fold, but if water were suddenly injected into it, its pressure would be increased 1700 times. What foreign gases could be generated in the boiler that exploded at Albany? What were the substances in the boiler capable of generating them? The water could not be resolved into its elementary gases by the hot boiler. Red hot iron will decompose some water by absorbing the oxygen and setting the hydrogen free, but the latter gas is not explosive. Cold water injected on a red hot boiler plate at 1100°, will generate steam slower than if injected into a boiler having its plates of no higher temperature than 450°. Water poured on highly heated plates assumes the spheroidal form, and repels the heat; therefore the injecting of cold water into the heated boiler, at Albany, could not have produced foreign gases, nor have caused the explosion in the manner assumed by the engineer and witnesses mentioned. The boiler at Albany was hurriedly put up; hurriedly put to use without being tested, and recklessly managed without a gauge. All the business connected with it appears to have been driven with furious haste, and this always involves an unwise regard of consequences. As so many engineers appear to be unacquainted with the fact that steam can be superheated in a boiler, and produce explosions in the manner stated, we hope the above will be discussed freely throughout all our engineering establishments, for the purpose of diffusing useful knowledge.

Shafts for the Adriatic.

The Philadelphia *Times* states that one of the shafts for the above noble steamship has been completed at the Reading Forge, Pa. In the rough, it weighed 40 tuns, when finished it will weigh 33 tuns. It is the heaviest shaft ever forged in our country. The crank for it will weigh 16 tuns.

A Great Philosopher Dead.

Sir William Hamilton died at Edinburgh on the 6th inst. He was generally considered the most profound philosopher in Europe. His reach of thought was vast, and his learning deep and extensive.

TO CORRESPONDENTS.

H. Francis, of Richmond, C. W.—The spirit of your criticism on our "vulgar" method of spelling words ending in "re," etc., is evidently in bad taste. You refer us to Webster, an authority we are quite ready to accept and if you had taken the trouble to consult this standard before pouring your vials of contempt upon us, you would have learned to be less flippant. For the correctness of our orthography in rendering the words center, fiber saltpeter, hight, hub, tun, etc., see Webster, your own quoted authority. You are evidently a little too "learned" for this part of the world, and we would advise you to migrate to some region where spelling is practiced more to your own notion. Before going, however, you might render "Yankee vulgarism" some service, by getting out a dictionary for their special benefit. Suppose you try your hand at this business, and leave us a legacy out of your profound store of knowledge.

J. N. R., of Pa.—The only way to satisfy yourself regarding your proposed method of improving the manufacture of iron and steel is by experiment. The least change in any chemical process produces a new result. The experiments made in France, and said to be so sucessful, in manufacturing silk from the mulberry tree, seem to be more advanced than yours. The field is a very wide one for experiment. Nothing but successful experiments can give you or others confidence in their value.

R. Sanerhering, Mayville, Wis., wishes to purchase a machine for turning spokes.

E. S., of Ill.—If Mr. W. claims a patent for that which is not new, he cannot sustain it, even if the office ignorantly issue a patent for it.

A. A. K., of Tenn.—Scott's Cotton Spinner is published by H. C. Baird, Philadelphia. It will give you the information desired. There is a chapter in it devoted to weaving.

Merritt & Cruickshank, of Pittston, Pa., wish to purchase cultivator teeth.

A. S. P., of Mich.—We do not know the cost of a set of works on Phrenology. You had better address your inquiries to Messrs. Fowlers & Wells, of this city. They publish all the works that are issued here upon this subject. Webster's Dictionary contains more chemical terms than any other. Hoblyn's small work, by Appleton & Co., might answer your purpose. It is a tolerably good work.

A. M., of Canada—We cannot inform you as to the brick machine.

E. C., of Conn.—Consult some elementary work on mechanics, and inform yonrself as to the toggle joint motion, &c. Baker's Elements of Mechanism, $1, published by Putnam & Co., N. Y., is as good as any.

W. P. H., of Va.—All builders of re-action water wheels assert that more water will pass through some wheels while running than when standing, and an article on this subject, published in Vol. 7, Sci. Am., page 212, shows the course of the water through a wheel. We yet expect some scientific millwright will elucidate the question clearly.

I. S. D., of N. H.—If the floor of the shop in which the forge is placed is of earth, stone, or metal, it is fire-proof already, and you do not require a fire-proof cement for it. If it is in an upper room with a wooden floor, the cheapest plan for you to pursue is to coat it with Blake's or the Bridgewater fire-proof paint. You can purchase these at all the paint stores in this city, and no doubt can have them sent to you. Directions will be given with the paint how to apply it.

C & M., of N. Y.—Such a propeller for a balloon as you describe is new, but not being very useful it is doubtful if a patent could be obtained. The gunpowder engine could not be patented. We advise you not to spend time nor money on them.

J. & W. C. of Ky.—There are no meters manufactured in this city that would measure your oil as it flows from the retorts. Rotary water meters are made in Boston to measure the city water, but we do not think they would answer your purpose.

J. W. M. W., of Phila.—We do not know the process pursued by any party for bleaching gutta percha, but if kept for some time in a covered vessel containing a warm and clear solution of the chlorate of lime, we believe gutta percha will be bleached like a piece of cotton cloth

E. M. & Sons, of Mass.—For burning shavings we would prefer to have the hot gases and flame pass three times round the boiler: but for burning coal we would prefer to split the draft and use a double return draft only.

Sarah Lee, of West Bloomfield, N. Y., wishes to purchase a machine for knitting stock ngs. Something not expensive, that will do up the work like a charm. Who can supply the wants of this enterprising woman, in her laudable desire to clothe the "understandings" of humanity?

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, May 24, 1856:—

J. R. M., of O., $24; A. D. B., of Ga., $25; G. S. K., of O., $50; O. V. D. R., of Ill., $25; G. A., of Pa., $30; H. G., of N. Y., $30; S. & B., of Mich., $30; J. C. H., of N. Y., $25; T. S., of Iowa, $30; F. & W., of Conn., $30; R. W., of Conn., $30; D. R., of Pa., $55; F. E., of Pa., $25; V. R. S., of N. Y., $25; J. H. S., of Ky., $25; E. & A. S., of N. Y., $30; J. B., of Ill., $10; J. D., of O., $30; D. D. A., of Mass., $30; B. & P., of Ind., $35; W. C., of Pa., $30; C. & T., of Wis., $35; R. G., of N. Y., $25; J. De S., of N. Y., $25; W. B. & Co., of R. I., $25; J. M., of Pa., $100; G. H. B., of N. Y., $30; T. C., Jr., of L. I., $25; R. C., of Mich., $10; M. & P. of Ky., $29; J. R., of Pa., $60; W. & St. J., of N. Y., $30; J. L., of N. Y., $30; R. U., of Mich., $10; J. C. of Pa., $30; O. D., of Md., $5; W. & D., of Ky., $25; J. R., of N. J., $30; J. B. B., of L. I., $200; W. S., of Mass., $25; J. G. B., of N. Y., $35; H. B. B., of London, $333; H. & C. P., of Tenn., $25; W. K. P., of Mass., $25; H. H. C., of Pa., $30; E. G. S., of N. Y., $30; H. H. E., of Conn., $30; G. C. E., of N. Y., $25; S. B., of N. Y., $25; J. H. W., of N. Y. $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, May 24:—

J. C. H., of N. Y.; A. D. B., of Ga.; J. M., Jr., of N. Y., H. B. C., of N. Y.; O. V. D. R., of Ill.; G. S. K., of O., (2 cases); J. A. S., of Ky.; P. E., of Pa., G. C. E., of N. Y.; S. B., of N. Y.; E. A. B., of Mass.; V. R. S., of N. Y.; D. B., of N. Y.; O. D., of Md.; W. B. & Co., of R. I.; J. C., of Pa.; C. & F., of Me; W. & D., of Ky.; W. S. T., of Mass.; T. C., Jr., of L. I.; R. G., of N. Y.; J. De S., of N. Y.; W. S., of Mass.; H. & C. P., of Tenn.; W. K. P., of Mass.; M. & P., of Ky.; J. H. W., of N. Y.

Important Items.

To the Unfortunate—We are no longer able to supply the back numbers of the present volume previous to No. 27, except from 1 to 13. Such numbers as we have to furnish, are gratuitously supplied to such subscribers as failed to receive them; and we would take occasion to state, that any person failing to receive their paper regularly, will confer a favor by notifying us of the fact. Missing numbers should be ordered early, to insure their receipt, as an entire edition is often exhausted within ten days after the date of publication.

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THE UNDERSIGNED having had Ten years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

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Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

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THE MASSACHUSETTS CHARITABLE MECHANIC ASSOCIATION Respectfully announce to the public their eighth Great Exhibition of American Manufactures and Mechanic Arts, to be opened at Faneuil and Quincy Halls, in the City of Boston, on Wednesday, the 10th of September. New inventions, improvements in the arts, and specimens of rare handiwork in every department of industry will be welcome to the Halls; and every facility will be afforded for a good display and the proper care of contributions. Medals of gold, silver, and bronze, and a new diploma designed by Billings, will be given to those whose articles merit such awards. Communications from those who wish more particular information, and from those who will require much space, may be addressed to the subscriber.

38 6eow JOSEPH L. BATES, Secretary.

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VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and tearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch. LOGAN & LIDGERWOOD, 13 1y* 9 Gold st., N. Y.

VERTICAL STEAM ENGINE and Boiler for Sale at a bargain. The Engine is nearly new, and well finished. The cylinder is 9 inches; the fly wheel is a band wheel 5 feet in diameter, face 14 inches, turned off, weight 1350 lbs. The boiler is 20 feet long, 42 inches in diameter, 1 flue 17 inches, well braced wrought-iron heads; it is very strong, and has been in use about six months; is about 15-horse power. Cost $1,200, will be sold for $575 cash; delivered on ship board. Apply to MUNN & CO., at this office.

MACHINISTS' TOOLS—Meriden Machine Co have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 32 13*

THE AMERICAN PLATE GLASS CO. Having erected extensive works in East Brooklyn, (foot of North Sixth st.) are now prepared to execute promptly all orders forwarded to them, for Rough Plate Glass, for Sky Lights, Floor Lights, Pavements, Deck Lights for vessels, &c. Also an entirely new article possessing the properties and beauties of Agate, called Chalcedon. This material supersedes Marble, in its superior quality and utility for the purpose of Flooring, Mantel Pieces, Table Tops, and Ornamental Architecture. All orders left at the Office of the Company will receive prompt attention. Office 420 Broadway. Rough Plate Glass in the Sheet at the factory, 1-4 in. 35c.; 3-8 in. 55c.; 1-2 in. 40c.; 5-8 in. 60c.; 3-4 in. 75c.; 7-8 in. 80.; 1 in. 85c.; 1 1-4 in. $1 25. Terms cash in 30 days. 27 13*

1856.—WOODWORTH'S PATENT Planing, Tonguеing and Grooving Machines.—The subscriber is constantly manufacturing, and has now for sale the best assortment of these unrivalled machines to be found in the United States. Prices from $35 to $1,250. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania. JOHN GIBSON, Planing Mills, Albany, N. Y. 30 3m*

PATENT RIGHTS FOR SALE—The undersigned are prepared to sell State and County rights for Clapp's improved Bench Hook and Clamp, a full description of which is given in the Sci. Am. of May 10th. This Bench Clamp, from its extreme cheapness, simplicity, and utility must come into universal use. Address, with postage stamp enclosed, to CLAPP & NUTTALL, Wappinger's Falls, Dutchess Co., N. Y. 35 4*

IRON FOUNDER'S FACING MATERIALS—Viz. Sea Coal, Hardwood Charcoal, Lehigh Coal, Soapstone, and German Black Lead finely pulverized; also Core Flour, Fire Clay, Fire Sand, and Fire Bricks, for sale by G. O. ROBERTSON, 135 Water st., New York. 35 4*

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OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer. F. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 33 tf

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb. 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS, 208 Broadway, New York.

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GRAIN MILLS—EDWARD HARRISON, of New Haven, Conn., has on hand for sale, and is constantly manufacturing to order, a great variety of his approved Flour and Grain Mills, including Bolting Machinery, Elevators, complete with Mills ready for use. Orders addressed as above to the patentee, who is the exclusive manufacturer, will be supplied with the latest improvements. Cut sent to applications, and all mills warranted to give satisfaction. 29tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co New Haven, Conn. 19 tf

AGENCY FOR THE PURCHASE AND SALE of valuable patents and inventions, T. H. LEAVITT, No. 1 Phœnix Buildings, Boston. None but matters of real merit and utility will receive any attention. Circulars containing further information may be had on application. 29 12*

Science and Art.

Iodine.

Iodine derives its name from *iodos*, a Greek word signifying 'violet-colored;" but the transcendent beauty of the color of its vapor requires further elucidation than simply saying that it has a "violet hue." If a little iodine be placed on a hot tile, it rises into a magnificent dense vapor, fit for the last scene of a theatrical representation. This remarkable substance was discovered by accident about forty years ago. At that period chemical philosophy was in great repute, owing principally to the brilliant discoveries made by Sir Humphrey Davy. So singular a substance as iodine was to Davy a source of infinite pleasure. He studied its nature and properties with the fondness and zeal of a child at a puzzle map. His great aim was to prove its compound nature; but in this he failed; and to this day it is believed to be one of the primitive "elements" of the world we live in. Iodine is found in almost every natural substance with which we are acquainted, although in very minute portions. The sea furnishes an inexhaustible supply of iodine. All the fish, the shells, the sponges, and weeds of the ocean yield it in passing through the chemical sieve. Whatever be the food of sea-weeds, it is certain that iodine forms a portion of their daily banquet; and to these beautiful plants we turn when iodine is to be manufactured for commercial purposes. The weeds cast up by the boiling surf upon the desolate shores of the sea islands, would, at first sight, appear the most useless things in the world; but they are not; their mission is fulfilled; they have drawn the iodine from the briny wave, and are ready to yield it up for the benefit and happiness of man. The inhabitants of the Tyrol are subject to a very painful disease, called goiter or cretinism; for this malady iodine is a perfect cure. Go and have your portrait painted "as you are." Photography tells the whole truth without flattery; and the colors used in the process are only silver and iodine.

SEPTIMUS PIESSE.

Improved Dredging Machinery.

Machines for deepening rivers, harbors, channels, &c., are in extensive use throughout the country. They generally consist of boats carrying a steam engine, which puts in motion a series of scoops or iron buckets, so arranged as to descend under water, scrape along the bottom, and remove the mud.—These dredges can only be used to advantage on smooth water; if there is a swell, the waves lift the boat and prevent the scoops from touching the ground, rendering the action of the machinery irregular, &c. There are many fine harbors and sea ways that might be opened or rendered safe for navigation provided their entrances could be deepened; but until the present time, owing to the reason just named, no dredge has been constructed by which the work could be done.

The invention herewith illustrated is a dredging apparatus, that works equally well whether the water be smooth or rough; the boat may rise and fall continually with the swell, but the excavation will proceed with the utmost regularity.

The hull, A, is constructed like any other sea vessel, except a well hole in the center, through which the scooping machinery works. The buckets, B, are constructed with a hinged bottom and a latch, which, when at a proper hight, is tripped by the vibrating spout, J, and the excavated material discharged into the well, forward of the machinery. The buckets are attached to the chain in a peculiar manner, which admits of their being readily detached, and hooks, for hard digging, supplied in the place of every alternate basket; the hooks serve to loosen the ground like pick-axes. The vibrating spout, J, is tilted at the proper moment by means of its connection through levers J' J' with wheel K.

If the material be such as will not readily level itself in the hull, a swing bucket is attached—but not here shown—to work in concert with the vibrating shout, J, by the same machinery, that will convey it to any part of the hull required.

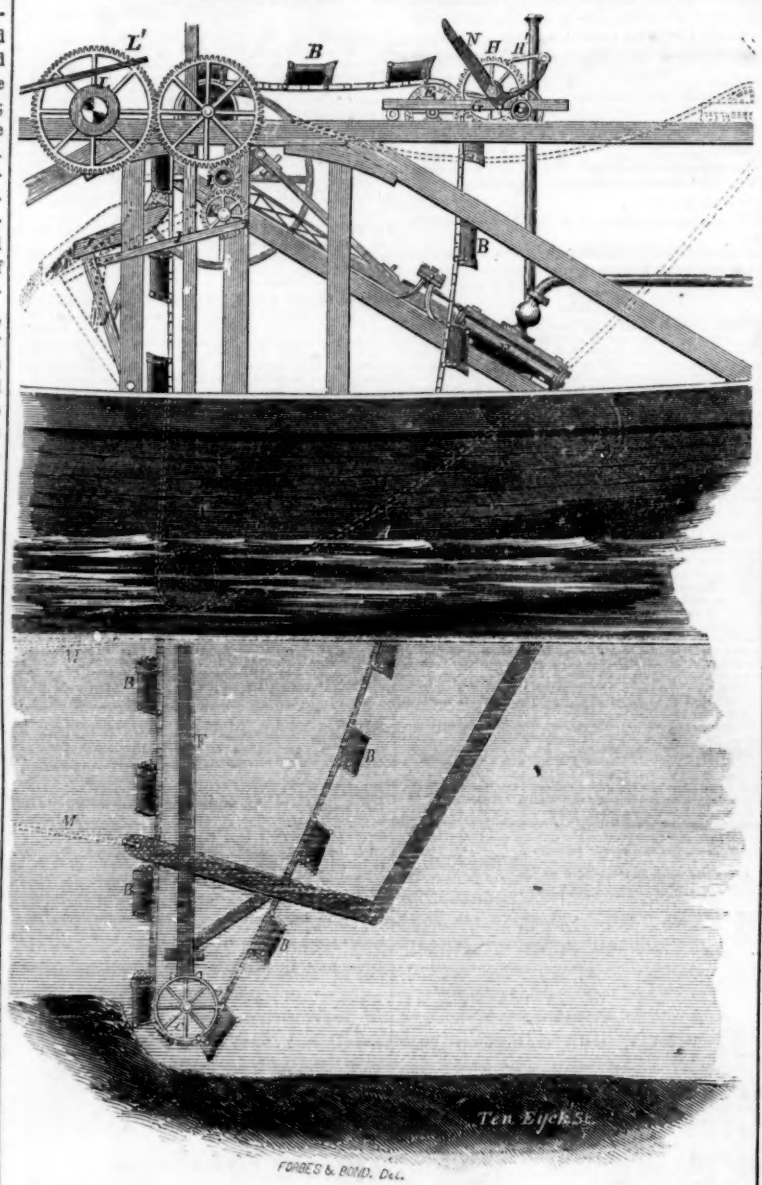
The pawl, H', which works in the wheel, H, is jointed to an arm of the pillow block, so that if by accident or otherwise the machinery should at any time have a backward motion, the pressure on the hull will disengage the wheel, H, and prevent any breaking of machinery which must otherwise take place.

The feeding windlass wheel, L, is geared into the main cog wheel on the driving wheel shaft, I, and is provided with a lever pawl, L', to hold the machine to the work when not in gear; the lever pawl is so arranged to throw the wheel, L, out of gear if a backward motion of the machinery takes place, thus preventing breakage, as before mentioned.

The lower pair of wheels, C, are attached to the ways, F, which are so arranged as to move freely up and down to accommodate the motion of the boat in a sea way. While the machine is in operation the loaded buckets on the perpendicular part of the chain are kept in motion equal to that of the sea, so that the loaded part of the chain is not slackened at any time by the motion of the hull. The sag of the empty buckets on the back part of the chain is a perfect compensation movement to the upward motion of the waves or downward motion of the hull.

The crotched chain, M, is fastened to the ways, F, uniting into one, and passing over pulleys in the stern of the hull, and attached to a weight or spring, so that when the buckets come in contact with any unyielding obstruction, the ways are allowed to rise, and the buckets pass over it without damage to the machinery.

IMPROVEMENT IN DREDGING MACHINES.



The propeling power required is so much greater than is necessary for the excavating machinery that it is economy to employ separate engines with the same boiler. The propeller engine is situated below, (not seen in the engraving,) and works a screw propeller.

When the excavating machinery is not wanted for use the gear wheel, H, is thrown in gear by the handle, N, and the buckets raised up above the bottom of the hull by means of the locomotive gearing on the car, G, which terminates in the pinion, o, working in a rack on the frame work, by which it is drawn back to the situation shown by the dotted lines.

This kind of machine will work in any sea when the wind is not so severe as to drag anchor. The usual motion in a sea-way in good weather, if the material be hard, is of great advantage in working the buckets through it.

The boat is propelled from place to place by a screw at the stern. The sinks in the hull into which the mud is dumped, have trap door bottoms. When the boat is loaded she steams off to the proper place; the traps are then opened and the load falls out. The interruption of the work by thus retiring to discharge, is partly compensated by the less number of men required; lighters and tug boats are also dispensed with—the vessel is a perfect combined steamboat and dredger.

The boat is intended to be capable of carrying at least one hundred tuns, and long enough not to be too much affected by short swells, so that it may be profitably worked when lighters cannot be kept alongside, which is the main object of the machinery.

The inventor says that a compartment may be constructed of boiler iron to fit in the well and sink holes, when the scoops are drawn up. Thus the dredge may be converted into a seaworthy screw steamer, and sent to Europe with freight enough to pay expenses, in perfect safety, and be ready for dredging operations immediately on arrival.

The inventor is Mr. D. S. Howard, of Corpus Christi, Texas, who will give further information.

C. H. Haswell, Civil and Marine Engineer, No. 6 Bowling Green, N. Y. is agent for Mr. Howard. See advertisement in another column.

Life Preservers.

We lately saw two life preservers, simple, effectual, and low priced. One, invented by J. B. Davis, of this city, consisted of an elliptical ring of cork, covered with canvas, in shape somewhat similar to a life-boat, but much smaller; on one of the inner sides were fastened two straps, to be kept loose when not in use, and on the two outsides, in the middle, were two small paddles. A person seizing one of these in the water, it immediately throws itself over his head. The loose straps can then be stretched across and fastened to the opposite inner side, thus making a support under the arms; the paddles can then be disconnected, and the individual is enabled to steer himself to the nearest point of safety.

Another life preserver is Tewksbury's Patent Marine Seat. This in shape strongly resembles a sand glass on a large scale, only substituting tin for the glass. Being air-tight and hollow, with a wooden frame, a buoyancy of 36 lbs. is obtained, and as many as three persons can be supported by one of them. This a paratus, when not used in the water, serves for a light and portable seat on the deck and in the cabin of a ship. They are 15 inches diameter top and bottom, and stand 16 inches high. They are now nearly unanimously adopted by steamers and packets from Boston and other Eastern ports, and numerous other boats are supplied with sets of them. If ships were not furnished with life-preserving apparatus, every indivldual is enabled to possess one of these as his own private property which will assuredly prove a "friend in need."

Remedy for the Striped Bug.

It is said that if black pepper be dusted over the vines of cucumbers and water melons, while the dew is on them, that it will effectually banish these destructive pests—striped bugs.

One million tuns of iron are now manufactured annually in the United States.

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